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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/862,458	05/23/2001	Masahiko Tanaka	001425-104	7476

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EXAMINER	
MOORE, KARLA A	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/862,458	TANAKA ET AL.	
	Examiner	Art Unit	
	Karla Moore	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5,8-11,14-17,20-24,26 and 27* is/are rejected.

7)☒ Claim(s) *2,3,6,7,12,13,18,19 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4-5, 8-9, 14-15, and 20-24, 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 11-168094A to Yuda in view of U.S. Patent No. 6,086,677 to Umotoy et al.

3. Yuda et al. disclose the invention substantially as claimed in Figure 1 and comprising: a vacuum reaction chamber (Figure 1, 16) and a electrically conducting dividing plate/dividing means (Figures 8-10, 26; paragraph 43 of JPO online translation), the vacuum reaction chamber is divided into a plasma discharge space (Figure 8, above the plate) and a film deposition process space (Figure 8, below the plate), the dividing plate having a plurality of internal spaces (27) and a plurality of holes (30) therein, the internal spaces are connected with the film deposition process space, the plurality of holes connect the plasma discharge space with the film deposition process space, and a plasma is used to generate radicals in the plasma discharge space, which radicals are introduced into the said film deposition process space through the plurality of holes in the dividing plate, and a precursor gas (9) is directly introduced into the film deposition process space form the internal spaces, whereby the radicals and precursor gas introduced into the film deposition process space react together to deposit a film (4) on a substrate (3) disposed in the film deposition process space, the dividing plate is constructed so as to separate the radicals generated in the plasma discharge space from the precursor gas while the precursor gas is in the internal spaces.

4. However, Yuda et al. fail to teach the dividing plate is made of a plurality of plates connected together by securely bonding them over substantially an entire area of their interfacial surfaces.

5. Umotoy et al. teach using a plurality of plates as a way to maintain gases in separate passages of a distribution plate until they exit the distribution plate into the process region (column 1, row 64 through column 2, row 5). Umotoy et al. further teach fusing together a plurality of laminated plates at their contacting surfaces for the purpose of avoiding the use of o-rings while maintaining separation of gases as gases transition from the upper plate to the lower plate (column 3, rows 33-44 and column 5, rows 5-15). Also see column 7, rows 40-47.

6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a plurality of laminated plates fused together at their contacting surfaces in Yuda et al. in order to maintain gases in separate passageways until they exit the distribution plate into the process region and in order to avoid the use of o-rings while maintaining a separation of gases as the gases transition form an upper plate to a lower plate as taught by Umotoy et al.

7. With respect to claims 4, 14, 20, 22-23 and 26, as noted above, the dividing plate is made by connecting together a plurality of laminated plates by securely bonding them ever the entire area of their interfacial surfaces (this includes the outer periphery and portions that are within the outer periphery, as recited in claim 9). Additionally, the plurality of holes provided in the dividing plate is formed by piercing through it at positions where the internal spaces are not disposed (i.e. they do not overlap).

8. With respect to claims 5, 8 and 27, Yuda et al. and Umotoy et al. disclose the invention substantially as claimed and as described above.

9. However, Yuda et al. and Umotoy et al. fail to teach a plurality of holes formed to satisfy the condition $uL/D>1$, where u is the gas flow rate inside the holes, L is the effective length of the holes and D is the diffusion coefficient.

10. Umotoy et al. teach that the choice of hole size for each gas is purely a process condition and as such, hole size will depend on gas flow rate, gas pressure, gas type, chamber pressure and the like (column 5, rows 57-63).

11. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to find an optimum gas hole configuration in Yuda et al. and Umotoy et al. based on conditions of each individual process as taught by Umotoy et al.

12. Further, the courts have ruled where the general conditions of a claim are disclosed by the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 2235 (CCPA 1955).

13. With respect to claims 9, 15, 21, 24, Yuda et al. teach that the dividing plate is an electrode, so it would inherently be made of electrically conductive material.

14. Claims 10-11 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuda et al. and Umotoy et al. as applied to claims 1, 4-5, 8-9, 11, 14-15, 17 and 20-24, 26-27 above, and in view of U.S. Patent No. 5,433,786 to Hu et al.

15. Yuda et al. and Umotoy et al. disclose the invention substantially as claimed and as described above.

16. However, Yuda et al. and Umotoy et al. fail to teach the plurality of plates bonded together by a plurality of rivets or threaded fasteners.

17. Hu et al. teach the use of rivets and other suitable fastening means for the purpose of assembling an electrode (column 3, rows 53-56).

18. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided rivets or other suitable fastening means in Yuda et al. and Umotoy et al. in order to assemble the dividing plate/electrode as taught by Hu et al. Further, the courts have ruled that an express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

Allowable Subject Matter

19. Claims 2-3, 6-7, 12-13, 18-19 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. The prior art presented above fails to teach or fairly suggest a plurality of metal fixings (either rivets or threaded parts) to securely bond the laminated plates over the entire area of their interfacial surfaces, and the plurality of holes provided in the dividing plate are provided through the metal fixings. Additionally, no other prior art reference provides motivation for the feature.

Response to Arguments

21. Applicant's arguments presented in submissions filed on 6/29/04 and 8/12/04 with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection. Yuda et al. has been used in the rejections to address the newly added recitations. Examiner believes that the Yuda et al. reference is more similar to the claimed invention and that the arguments raised with respect to Ashtiani et al. are not applicable to this reference. Therefore they are not addressed here.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571.272.1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

km
29 September 2004

P. Hassanzadeh

Parviz Hassanzadeh
Primary Examiner
Art Unit 1763